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RESEARCH ARTICLE

## Traffic and Air Pollution: How Can Public Participation and Speed Limit Legislation Benefit Health Outcomes in Germany

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**ABSTRACT:**

The increase of automobile traffic and expansions of highways is driving air pollution globally. This article takes an interdisciplinary approach looking at health, policy, public participation, and legislation and applies it to the context of Germany. In the context of a world grappling with the compounding challenges of the climate crises, fuel scarcity, and geopolitical tensions, the discourse around a general speed limit for the German Autobahn has gained unprecedented momentum. Despite Germany's unique absence of a speed limit on highways, the imperatives of climate action and public health are driving the urgency of re-evaluating this tradition. This article engages with the complex intersection of public health, environmental impact, and democratic decision-making to address the compelling case for a speed limit on German highways.

Amidst the global call for sustainable solutions, the interdisciplinary nature of this research is paramount. By exploring the intricate relationships between the automotive industry, public health, and environmental degradation, we shed light on the critical role that transportation policies play in shaping our collective future. Our investigation delves into diverse models of public participation, spotlighting the Citizens Assembly as a promising platform for democratic engagement. Beyond mere tokenism, we emphasize the necessity for actionable outcomes that genuinely empower citizens to influence policy directions.

A key aspect are the evidence-based recommendations as a way forward in the German speed limit debate. Evidence reveals that public opinion in Germany favours a speed limit. Beyond the ecological gains, we underscore the underappreciated health co-benefits intrinsic to speed reduction—a dimension pivotal in shaping the discourse on comprehensive societal well-being. Progressive action, guided by informed democratic participation, is the cornerstone of sustainable change. We urge Germany to overcome inertia and propose concrete legislative measures that are in line with the aspirations of its citizens and the imperatives of global sustainability. Given the magnitude of the climate emergency, the adoption of pragmatic interventions, including a speed limit, assumes the character of a paramount step forward in Germany's commitment to a greener and healthier future.

**Keywords:** Air pollution, Speed limit, Autobahn, Public Participation, Public Health, Climate Crisis, Citizens Assembly

## Introduction:

The negative health effects of exhaust fumes are a growing concern<sup>1</sup>. Air pollution has become one of the most pressing public health issues of our time. One of the main contributors to this global crisis are exhaust emissions from vehicles and diesel engines which initiate and exacerbate disease<sup>2</sup>. Exhaust emissions pose significant health risks to humans because they contain a complex mixture of pollutants. They have a wide range of health effects<sup>3,4</sup>. In people with pre-existing asthma, breathing in exhaust fumes can trigger an asthma attack<sup>3,4</sup>. It can also cause bronchoconstriction, making it difficult to breathe<sup>3</sup>. In December 2020, a landmark case ruled that air pollution was a cause of death in the case of a nine-year-old girl in London<sup>5</sup>. Her death was caused by acute respiratory distress syndrome, severe asthma, and continuous exposure to air pollution<sup>6</sup>. The girl was exposed to hazardous levels of nitrogen dioxide and particulate matter (PM) that exceeded World Health Organization guidelines. The main source of the pollution was traffic emissions<sup>6</sup>.

Germany is the one of the only countries in the world without a general speed limit on its highways<sup>7</sup>. The history of the German “Autobahn” goes back the 1920s and is a product of the 3<sup>rd</sup> Reich and the National Socialists<sup>7,8</sup>. The word “Autobahn” has become synonymous with freedom from limitations and has led to a form of speed tourism with people from around the world coming to Germany to speed along on German highways<sup>7</sup>. However, it has also been a topic of debate for many decades now due to the road safety risks, climate emissions, public health and more recently the war in Ukraine<sup>9</sup>. Public surveys reveal that the majority of Germans want a speed limit on the Autobahn<sup>10</sup>. Furthermore, in Germany’s 2021 Citizens’ Assembly, which is a representation of a German “mini-public”, a national speed limit on federal highways was the seventh recommendation put forward for German climate policy<sup>11</sup>. This poses the question – why does Germany not have a speed limit and how can this contentious issue be solved? There seems to be a disconnect between public participation methods and genuine empowerment to enact the will of the people in a democratic country.

To outsiders it might seem a little strange – how come all other countries have managed to set up a national speed limit on highways, except Germany? Why are German tourists perfectly happy to abide by speed limit laws in other countries and seemingly fiercely protective over their right and freedom to speed along the Autobahn? The topic of a speed limit on German highways has been a debate over the last 50 years<sup>12</sup>. With contemporary debates on

climate commitments and ethical concerns the topic has risen on the political agenda again<sup>12</sup>.

## Methodology:

This research takes an interdisciplinary literature review approach by combining the fields of health, politics, and law. It takes the case study of Germany being one of the only countries in the world without a general speed limit on highways and analyses the impact on politics, health, and emissions. It utilises citizen participation models to explore attempts to address speed limit and air pollution concerns in Germany. Firstly, by looking at petitions and public opinion on the topic of a speed limit on the German Autobahn and then by analysing citizen assemblies, and the results of the German Citizen Assembly. It classifies the German Citizen Assembly as a failed attempt to involve citizens within policy decisions on public health and environmental protection. The research article analyses solutions ranging from referenda to legislative change. The research attempts to break the silos of academia by cross-referencing the fields of public health, public participation, environmental protection, and legislation.

## HEALTH IMPLICATION OF AIR POLLUTION FROM CAR FUMES:

Long-term exposure to exhaust fumes can lead to the development or worsening of chronic obstructive pulmonary disease (COPD)<sup>13</sup>. COPD is a progressive and debilitating respiratory disease. Studies have linked exposure to air pollution to an increased risk of heart attack and stroke<sup>14</sup>. The fine particles in exhaust fumes can lead to the development and progression of atherosclerosis, the hardening and narrowing of the arteries. Long-term exposure to air pollution can cause cognitive deficits in both children and adults, and there’s emerging evidence linking air pollution to an increased risk of mood disorders such as depression and anxiety<sup>15</sup>.

Exhaust fumes contain several carcinogenic compounds<sup>16</sup>. These include benzene, formaldehyde, and polycyclic aromatic hydrocarbons (PAHs). The risk of developing lung cancer can be significantly increased by prolonged exposure to these compounds<sup>16</sup>. Some studies also suggest a link between exposure to exhaust pollutants and bladder, breast, and other cancers<sup>17</sup>. The hypothesis that living near busy roads may increase the risk of childhood leukaemia is supported by the ESCALE study in France<sup>16</sup>. Traffic related exhaust fumes can also have a negative effect on a growing body of children<sup>18</sup>. Premature birth and low birth weight have been associated with exposure to exhaust fumes during pregnancy<sup>19</sup>.

Chronic exposure during early life can affect cognitive development, leading to long-term academic and behavioural problems in children<sup>4</sup>.

Particulate matter can aggravate allergic reactions and cause sensitization to other allergens, leading to more frequent and severe allergic reactions<sup>4</sup>. Fine particles can irritate the eyes, causing redness, itching and even conjunctivitis. Chronic exposure to exhaust pollutants can lead to suppression of the immune system, making people more susceptible to infections<sup>20,21</sup>. Addressing the health risks posed by exhaust emissions requires collective action at both individual and societal levels. This is another reason why speed limits are important to prevent short and long-term health effects<sup>22</sup>. High speeding results in over 30% of road fatalities as reported by the European Road Safety Observatory<sup>23</sup>. Furthermore, paragraph 11 in the Stockholm Declaration on Road Safety at the Third Global Ministerial Conference on Road Safety in 2020 stresses the need for speed limits and of law enforcement to prevent speeding, “noting that efforts to reduce speed in general will have a beneficial impact on air quality and climate change as well as being vital to reduce road traffic death and injuries.”<sup>24</sup>

#### CASE STUDY ON THE PUBLIC POLICY DEBATE OF THE GERMANY SPEED LIMIT:

Currently over 14,9 million people in Germany live within less than 2km/h from a highway without speed limit and this has implication on noise and air pollution affecting the health of the population and planet<sup>25</sup>. Petition after petition has emerged with at least three recent petitions of over 100 000 signatures on “Change.Org”<sup>26</sup>. Furthermore, the matter has been brought forward and voted on by the German Parliament in several consecutive years and was rejected in Parliament in 2019 and 2021 which no majority for a 130km (80 miles/h) speed limit<sup>27,28</sup>. With the climate and fuel crisis as well as the war in Ukraine – it is yet again at the top of the news. Twitter wars are waging with comments by frustrated citizens asking “what else needs to happen before Germany gets a speed limit? The climate crises, war, and fuel crises don’t seem to be enough”<sup>29</sup>. The debate continues as citizens phone in on national TV responding to the question “why do we not have a speed limit?” and expressing their opinions on whether Germany needs such a speed limit<sup>9</sup>. Many people argue for the urgent implementation of a speed limit to reduce CO<sub>2</sub> emissions, increase road safety, and boycott Russian fuel to send a stronger moral message against Russia’s war in Ukraine<sup>9</sup>. While it is a myth that all German highways are without speed limit around 70% of highways are<sup>12</sup>, and estimate calculations

project that with a speed limit of 120km/h the CO<sub>2</sub> emissions of cars on national highways would sink by 9% and save around 3,2 million tonnes of CO<sub>2</sub> annually<sup>30</sup>. As it stands the debate is in gridlock despite surveys by German environmental NGOs revealing that the majority of Germans would support a speed limit<sup>9,10</sup>.

In 2021 Germany gathered its first Citizens’ Assembly on Climate Change with 160 randomly selected people from across the country to gather recommendations on German climate policy<sup>11</sup>. Number seven of these recommendations is on the topic of speed limits and urges the German government to enact a general speed limit of 120km on all highways, 80km on rural roads and 30km/h in city areas<sup>11</sup>. This recommendation was voted and supported by 88 members and had 64 non- supporters<sup>11</sup>. While it does indicate that there are still significant numbers within the public against a general speed limit – there is nonetheless a majority in support. Furthermore, it illustrates that citizen participation and empowerment are generally classified as important aspects within democracy<sup>31</sup>. However, if they are not followed up by action – they are forms of tokenism rather than genuine empowerment<sup>31</sup>. Thus, this article focuses on recommending next steps of action following the Citizens’ Assembly. It seems Germany does not lack initiative in citizen participation but in following up this participation with real action. This poses a danger to such forms of participation since it disqualifies the process.

Citizen participation generally has the connotation and potential for citizen power<sup>31</sup>. It is the redistribution of power that enables citizens that are excluded from political and economic processes to be included and heard<sup>31</sup>. However, as Arnstein<sup>31</sup> (p216) puts it when describing the ladder of citizen participation there is a critical difference between the “empty ritual of participation” and the “real power needed to affect the outcome of the process”. The German Citizens’ Assembly shows good efforts of including voices of citizens from across the country and different social spheres<sup>11</sup>. However, if this is not followed up by action – it does nothing more than maintaining the status quo and keeping the public busy in “participating” and “consulting” without any change to the situation.

The question of speed limits on highways clearly seems to invoke question of values around personal freedom, role of the state, and moral duty in face of crises<sup>9</sup>. Thus, it would be a mistake to underestimate the role played by shared societal morals and values<sup>32</sup>. However, considering the rapidly changing climate, surveys revealing that

majority of Germans would support a speed limit<sup>9,10,30</sup>, and the outcomes of the German Citizens' Assembly<sup>11</sup> there also seem to be other key players that are inhibiting clear political action on the issue. Many point to the car lobby as a key culprit since it has a major influence on politics and is inhibiting progress on Climate Change and transport infrastructure<sup>33</sup>.

The automobile industry is very prevalent within the EU lobby and since Germany is a country with such a big and powerful car industry it is no surprise that it particularly prevalent in German politics<sup>34</sup>. German car companies have a strong lobbying power within the country, which then also reflects within European Union (EU) policy due to the clout Germany carries within the EU<sup>34</sup>. This lobbying prevents ambitious targets and regulation from being set at the regional level<sup>34</sup>. These car lobbying groups are the results of long and sustained relations within politics that have grown very influential and deep-seated within the operational wheels of politics<sup>34</sup>. Thus, the German car lobby wields influence well beyond the national level and therefore certainly also plays into the efforts of blocking a national speed limit and thus preventing health benefits and protecting vulnerable population as children and elderly.

Furthermore, reports and policy briefs warning of economic impacts of a speed limit also contribute to inciting fear of political action<sup>35</sup>. An example of such a policy brief would be that by Schmidt<sup>36</sup> by the Kiel Institute for the World Economy which outlines the economic costs associated with a general speed limit in Germany due to the effect on travel time and impact on "welfare loss". In this purely capitalist calculation, the cost on the national economy outweighs the cost association with CO<sub>2</sub> emissions and lives saved from accidents<sup>36</sup>. While it does not reject the need for changes in the transport system to address the climate crises it argues that this should be done through other measures such as carbon taxing and local regulations of traffic and speed limits<sup>36</sup>. This view seems to prevail in politics and lobbying despite studies and calculations showing that speed limit would have relatively little impact on travel times and could have significant health and climate benefits<sup>25</sup>.

While the simple recommendation might be a redesign of the German Citizens' Assembly purely on the topic of speed limits or propose alternative methods of public participation to solve this issue, one cannot help but argue that this is not the solution. Participation without practice is not only pointless but counter-productive. Even deliberative methods, such as mini-publics making

recommendations to government, are only tokenism if they are not followed up by action. This also points to Reed *et al.*'s<sup>37</sup> argument that successful participation cannot be defined in a linear fashion and that even those forms of participation which are higher up Arnstein's participation ladder can be forms of tokenism. However, to extend the argument beyond Reed *et al.*<sup>37</sup> - not to new models of participation- but a missing step to successful participation: policy and legislative action. Thus, the next steps of action proposed shall range from direct democracy tools such as referenda to taking the recommendations of the German Citizens' Assembly to the next appropriate level – legislation.

The consultations have taken place and the citizens have spoken<sup>11,26</sup>. The next step would be to put into place legislation. Given the decadal discussions and consultations on this topic there is not more need for public participation. In addition, both public surveys and the Citizens' Assembly, which is a representation of a mini-public of Germany, have showcased that most Germans are for a speed limit on highways. If further clarity or mandate is needed on this Germany could take the step Ireland took after its Citizens' Assembly and enact a referendum with a legal mandate that the result will change the law<sup>38,39</sup>.

Speaking of legal mandates there seems to be no clear action for the recommendations of the Citizens' Assembly. While the Germany Parliament welcomed the efforts and recommendations of the Citizens' Assembly and promised to consider them in Parliament<sup>40</sup> there is no legal mandate to do so. Thus, the Citizens' Climate Report<sup>11</sup> can easily be swept under the rug which would negate citizen efforts of putting together the almost 80 pages with 32 specific recommendations. Thus, a systemised constitutional deliberation effort is needed. In Ireland this was done by through merging the process of deliberation with a referendum<sup>39</sup>. While German politicians have generally dismissed forms of direct democracy like referenda<sup>41</sup> it would be worth reconsidering this for climate related policy. The speed limit could be trial run for more direct democracy – giving the final decision to the people and making sure there is widespread education about the implication. Although, if politicians would be truthful with themselves and their constituents, they would discover that the situation is ripe for action. A speed limit is one of the simpler decisions that will need to be made in the face of a Climate Emergency.

Even though this decision seems small, considering all other countries in the world have speed limits, this

is a defining moment in the future of German democracy. It illustrates the significance given to participation efforts and citizen concerns. The people have already decided what they want – the question is will politics listen to industry or their constituents? Participation without practice is a dangerous game for the legitimacy of citizen participation in a democracy. The next steps are either a referendum or direct translation of a national speed limit into legislation.

### **Conclusion:**

This concludes an analysis of citizen participation and consensus building on the topic of speed limits on the German Autobahn and resultant public health implications. While the issue is still contentious, most citizens want a speed limit. The main arguments being health benefits, protection of vulnerable population groups, climate change, the fuel crises, road safety concerns, and pollution impacts. This has been shown through public surveys, a multitude of petitions, and the recommendations put together by Germany's first Citizens' Assembly. The next step in the public participation stage is translation into political action either through direct democracy of a referendum or more simply through

putting in place the necessary legislation for a national speed limit. If the climate crisis, war in Europe, and public consensus are not enough to mandate change – it is time to reconsider the political institutional set-up and challenge the lobbying power of industry over citizen concerns. Germany prides itself in being a welfare state, but it increasingly seems it is only an “economic welfare state” rather than a social, health, and environmental welfare state. Participation without action is nothing but empty words and ways to keep the public subdued. It is time to call out these forms of tokenism and take concerns of citizens seriously. If Germany does not want to engage in forms of direct democracy such as referenda<sup>41</sup> then it should take efforts like the Citizens' Climate Assembly<sup>11</sup> particularly seriously and respond to the contemporary emergencies in the appropriate manner. Speed limits for national highways are but a small step for the action needed to mitigate and adapt to Climate Change and improve public health. Inaction at this level is of serious concern and should raise the alarm bells. This is not just a test of participation but of government legitimacy as a democratic welfare state. The point of action should have been 50 years ago, the next best one is right now.

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